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CURRENT SERIAL RECORDS

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VOLUME TABLES FOR TREES OF INTERIOR ALASKA

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The attached volume tables are derived from 695 tree measurements obtained in 1957 and 1960. Nine general areas were sampled north and south of the Alaska Range and on the Kenai Peninsula. Data were gathered for white spruce (Picea glauca), quaking aspen (Populus tremuloides), paper birch (Betula papyrifera), and balsam poplar (Populus balsamifera), including black cottonwood (P. trichocarpa) to a limited extent. Most tree measurements came from randomly located 1/50-acre plots within stands comprising at least one acre of the same type and stand-size class.

Smalian's formula was used to determine cubic-foot volume of sample trees at least 5.0 inches d.b.h. (diameter breast high). Volume was found between a one-foot stump and a minimum merchantable top of 4.0 inches inside bark (d.i.b.). Points of measurement were generally at 8.15-foot intervals.

The International 1/4-inch rule and Scribner rule were used to find board-foot volume of sample trees in 16-foot logs. The minimum d.b.h. of sawtimber-size spruce was 9.0 inches; for hardwoods, 11.0 inches. Limits were from a one-foot stump to a top equaling 40 percent of d.b.h., but not less than 6.0 inches d.i.b. in spruce and 8.0 inches d.i.b. in hardwoods.

Initial plottings of volume classes over $D^2H^{1/2}$ were linear over most of the range except those for paper birch cubic-foot and balsam poplar

D = d.b.h. in inches

H = total tree height in feet.

Spurr, Stephen H. Forest Inventory. 476 pp. New York: The Ronald Press Co. 1952.

¹/ The combined variable reported by Spurr where

board-foot. These lines dropped slightly at the upper ends--zones of few data. Variability increased with increasing values of D^2H for all plottings. Since the standard deviation of residuals was proportional to volume and volume proportional to D^2H , the variance of residuals was proportional to $(D^2H)^2$. Therefore, $\frac{1}{(D^2H)^2}$ was used in weighting the equations. Independent variables tested were D^2H , D, D^2 , $1/D^2$, and H.

Cubic-foot and board-foot tree volume equations for the four species were obtained by regression analyses 2/3. The F-test indicated that quaking aspen and paper birch data could be pooled. The best predictive equation is footnoted beneath each table in this report. Standard errors of estimate were approximated by (standard error of estimate, weighted form) $\overline{(D^2H)}$.

The table presented here with respect to paper birch cubic-foot volume differs from one published by Gregory $\frac{4}{2}$ in that: (1) paper birch and quaking aspen data were pooled herein; (2) volume was found by Smalian's formula, not graphically; and, (3) whole-inch d.b.h. classes (e.g., $5.0 \le 5 < 6.0$), not mid-point classes (e.g., $4.6 \le 5 < 5.6$) were used.

^{2/} Furnival, George M. Regression routines. Yale School of Forestry and Northeastern Forest Expt. Sta., 28 pp., mimeo. 1961

³/ Boles, James N. 40-series--stepwise regression system. Calif. Agr. Expt. Sta., Dept. of Agr. Econ., U. of Calif., Berkeley, 43 pp. dittoed. 1962.

⁴/ Gregory, Robert A. Cubic-foot volume tables for paper birch in Alaska. U. S. Forest Serv., Alaska Forest Res. Ctr., Tech. Note No. 49, 1 p. plus 4 tables. 1960.

Table 1.-- Volume table for white spruce in Alaska 1/

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Basis: trees	ured 4/	Number					27							8	7	2	2	П	2		1	7	1	1	1	1	1
	120 :															86.8	96.5	0	П	129	4	5	9	1	0	0	
	115													0.99		83.2		0	\vdash	123	3			/			
	110													63.1	71.1	9.62	88.5	8.76	108	118	2	140	5	9	176		203
	105											46.3	53.0	60.2	8.79	75.9	84.4	93.3	103	-	2	134	4	5		∞	194
	100									2	38.2	44.1	0	57.3	4.	72.3			7	107	\vdash	2	3		9		
	9.5							-	26.1	31.0	9	41.9	8	54.4	-	φ.	76.3		2.	102		2	3	4	152	164	175
	06						9	0	4.	6	4.	6	5	51.5	φ.	5	2	0	87.9		105	114	124	134	144	5	9
3	85					12.5	2	6	3	7	2.	7	2	48.6	4.		φ.	5	3	-	9	0	1	2	3	4	5
Cotal height, H (feet) 3	80				0.6	•	14.7		1		0	35.1	0	5	-		4.	0	·	2	3	0		П			148
ght, H	75					10.9	13.8	7	0	4.	8	2	7	42.8	48.3		0	9	3	80.2	7						
al hei	70		3.8	5.6		0	12.8	5	9.	2	9	0	5	0	5.	50.4	56.0										
Tot	65			5.2		9.4	11.8	14.6	17.6	-	4.	8	2	37.0	1	9	51.9										
	09			4.7		9.8	0	3	16.2	6	22.6	9	0	34.1	φ.	3.											
	55		•	•	•	•	6	12.2	•	7	20.7	24.0	7	31.2	35.2												
	50				5.3	•	8.9	11.1	13.4	16.0	18.7	21.7		28.3	31.9												
	45		2.2	3.4	4.7	6.2	•	6.6	12.0	14.3	16.8	0	22.3	25.4													
	40		1.9	2.9	4.1	5.5	7.0	8.7	10.6	12.7	14.8	7															
	35		•	•	3.5	•	0.9																				
	30				2.9			6.3															3				
D.b.h.		Inches	5	9	7	80	6	10	11	12	13	14	15	16	17	18	19			22							

^{1/} From weighted regression: V= -0.69934+0.002, 129, 464, 6 $\rm D^2H$. Standard error of estimate around mean volume = 2.08 cu.ft. = 9.7%; $\rm R^2$ = 0.983.

Volume, inside bark, between a one-foot stump and a minimum merchantable top of 4.0 inches inside bark.

Whole-inch class (e.g., 11.0 \le 11 < 12.0) $\frac{3}{4}$ Mid-point class (e.g., 57.6 \le 60 < 62.6) $\frac{4}{4}$ Lines contain basic data for 251 trees at least

Lines contain basic data for 251 trees at least 5.0 inches d.b.h.

Table 2. -- Volume table for white spruce in Alaska 1/

(In board feet, International 1/4-inch)

Basis: trees	ured4/	Number	2.7	26	23	14	21	14	11	8	7	2	2	П	2	1	1	1	1	1	1	!	1
	120:											504	9	631	6	770	4	2	0	6	1,178	9	1,364
	115									1	425	481	540	602	299	735	807	882	096		1,126	-	1,304
	110								308	355	404	457	514	573	635	701	692	841	916	994	1,074	1,158	4
	105							251	292	336	384	434	488	544	603	999	732	800	871	946	1,023	1,102	∞
	100					168	201	236	275	318	363	410	462	-	7	631	0	5	2	0	7	1,047	1,126
	9.5			0	130	158	∞	222	5	6	4	∞	3	∞	4	263	5	$\overline{}$	∞	4	920	9	1,066
et) 3/	9.0		82		2	147	/	208	242	∞	2	9	410	5	0	563	$\overline{}$	_	3	0	9	936	7
Total height, H ($\overline{ ext{feet}}$) 3	85				112			6	2	9	300	4	∞	2	/	528	∞	3	6	2	$\overline{}$	∞	948
height	80		69	84		126	5	179	210	243	279	317	358	400	446	493	543	594	4	0	764	2	
Total	7.5		63	77	94	-	3	165	0		258	0	3	/	-		0						
	70		57	69	85	0	2	150	/	0	237	1	0										
	65				92		-		9	∞	216	4	∞										
	09		44	54	29	83	0	121	4	9	195	2											
	55		38	46	28	72	88	0	2	5	174	0											
	50			39	49			93	111	131													
	45		26	31	40	51	63	78	4	3													
	40		20	24	31	40	20	63															
	: 35		13	16	21																		
D.b.h.		Inches	6	10	11	12	13	14			17												

1/ From weighted regression: $V = -67.1116 + 0.013,663,011 D^2 H + 3344.33/D^2$ Standard error of estimate around mean volume = 19.2 bd. ft. = 12.1%; $R^2 = 0.951$.

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 6.0 inches inside bark.

 $\frac{2}{}$ Whole-inch class (e.g., 11.0 $\le 11 < 12.0$).

/ Mid-point class (e.g., $57.6 \le 60 < 62.6$). / Lines contain basic data for 162 trees at least 9.0 inches d.b.h.

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Table 3.--Volume table for white spruce in Alaska 1/

(In board feet, Scribner)

D.b.h.									Total	heigh	ıt, H	l height, H ($\overline{ m feet}$) $^3\!\!$							••. •• ••	Basis: trees
	35 40	45	50	55	9	9 0	5 7	70	75	80	85	9.0	9.2	100	105	110	115	120		ured 4/
Inches																				Number
6	(10) (16)	(21)	(26)) (30	40	(4	4) (4	47) (50)	(23)	(26)	(28)								27
10	(13)(20)	(28)	(32)	(4	4	5	2		58	19		29	20							26
11	(16)(26)	\sim	(42	(5	5	9	다	69	74	80	82	06	9.2							23
12	(31)	(42)	_		9	9 7	7		92 1	001	107	115	2	130						14
13	(36)		09		8	6	1 1	01 1		122	132		152	163						21
14	40		67		6	10	6 1	-	32]	145	158	171		0	211					14
15		28			I	12	2 1	-			187	203	219	3	251	267				11
16		62	81	101	120	13	9	59 1	78 1	97	217	236	256	275	294	314	333			∞
17			89		_	15	8 1	Ш	03	26	249	272	9	-	340	363	386			7
18				124	_	17	7 2	03 2	30	99	283	309	3	9	388	415	441	468	8	2
19						19	7 2	8 2	28	88	318	349	379	409	440	470	200	53	0	2
20								2	88 3	322	356	390	425	459	494	528	9	59	7	П
21								3	19	357	396	434	473	512	550	589	627	9	9	2
22								က	51	94	437	480	523	266	609	652	695	738	8	П
23								က	85 4	33	480	528	276	624	7	719	767	81,	4	1
24									7	73	526	278	631	683	736	∞	841	768	4	1
25									2	15	573	630	889	746	0	861	918	97(9	1
2.6									3,	29	622	8	748	810	/	936	666	9	2	!
27									9	04	673	741	808			1,014	1,083	1,15	1	1
28									9		2	800	873	4	1,021	1,095	1,169	1,24	3	1
29											780	860	940	1,020	1,100	1,179	1,259	1,33	6	1

^{1/} From weighted regression: $V = 98.7701 + 0.02022 D^2H - 0.77651 D^2 - 1.63023 H$ Standard error of estimate around mean volume = 19.6 bd. ft. = 14.8%

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 6.0 inches inside bark. $\frac{2}{3}$ Whole-inch class (e.g., 11.0 \le 11 <12.0) $\frac{2}{3}$ Mid-point class (e.g., 57.6 \le 60 <62.6)

Lines contain basic data for 162 trees at least 9.0 inches d.b.h. Volumes in parentheses hand adjusted.

(In cubic feet, by Smalian's rule)

Basis: trees: measured 4/		18/5	13/24	23/20	22/15	27/17	15/15	12/13	13/3	4/4	6/3	1/2	-/7	-/5	-/3	-/1	1	1	1 1
	: 08					14.9	18.4	21.4	26.6	31.1	36.1	41.4	47.0	53.0	59.4	0.99	73.1	80.5	88.2
	75		0.9	8.3	11.0	13.9	17.2		24.8	29.1	33.8	38.7	44.0	49.6	55.6	61.8	68.5	75.4	82.7
	7.0	-	5.5	7.7	10.2	12.9	16.0	19.4	23.1	27.1	31.4	36.1	41.0	46.2	51.8	57.7	63.8	70.3	77.1
	65	3.3	5.1	7.1	9.4	11.9	14.8	18.0	21.4	25.1	29.1	33.4	38.0	42.9	48.0	53.5	59.2	65.2	71.5
et)3/	09	3.0	4.6	6.4	9.8	10.9	13.6	16.5	19.7	23.1	26.8	30.8	35.0	39.5	44.2	49.3	54.6	60.1	0.99
Total height, H (<u>feet)</u> 3/	55	2.7	4.1	5.8	7.8	6.6	12.4	15.0	18.0	21.1	24.5	28.1	32.0	36.1	40.5	45.1			
l height	50	2.3	3.7	5.2	7.0	8.9	11.2	13.6	16.2	19.1	22.2	25.5	29.0						
Tota	45	2.0	3.2		6.2		6.6	12.1	14.5										
L.,	40	1.7	2.7	4.0	5.4	•	8.7	10.6											
	35		2.2	3.3	•	5.9	•												
	: 30	1.0	1,8	2.7	•														
D.b.h.,	Inches	Ŋ	9	7	∞	6	10		12	13		2	9	7	8	6	0	21	2

Standard error of estimate around mean volume = 1.71 cu.ft. = 13.8%; $R^2 = 0.960$. From weighted regression: $V = -1.024,11 + 0.002,203,407,5 D^2H$.

Volume, inside bark, between a one-foot stump and a minimum merchantable top of 4.0 inches inside bark. Whole-inch class (e.g., $11.0 \le 11 < 12.0$).

 $[\]frac{3}{}$ Mid-point class (e.g., 57.6 \le 60 < 62.6).

Lines contain basic data for 154 aspen and 147 birch at least 5.0 inches d.b.h.

Table 5.-- Volume table for quaking aspen and paper birch in Alaska 1/ (In board feet, International 1/4-inch)

: Basis:	: trees $\frac{4}{}$	80 : Aspen-birch	Number	96 12/13	119 13/3	144 4/4	171 6/3	199 1/2	230 -/7	262 -/5	296 -/3	322 -/1	371	411	455
		7.5		. 88	110	133	158	185	214	244	276	310	346	383	423
3/	1	7.0		81	101	122	146	171	197	226	256	287	321	356	392
(1003)	iotai neignt, n (<u>ieet) —</u>	65		73	91	111	133	156	181	208	235	265	296	328	362
4-1	gnt, n	09		65	82	100	121	142	165	189	215	242	271	301	332
	cal nei	55		57	73	06	109	128	149	171	194				
E	101	50		49	63	79	96	113	132						
		45		41	54										
		40		33											
	$D \cdot D \cdot D \cdot D$	•	Inches	11	12	13	14	15	16	17	18	19	20	21	22

1/ From weighted regression: V = -29.8848 + 0.011,913,084 D²H Standard error of estimate around mean volume \doteq 25.4 bd. ft. \doteq 21.1%; $R^2 = 0.806$.

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 8.0 inches inside bark.

Whole-inch class (e.g. 11.0 \le 11 < 12.0). 3/ Mid-point class (e.g. 57.6 \le 60 < 62.6). 4/ Lines contain basic data for 36 aspen and 41 birch at least 11.0

inches d.b.h.

Table 6. -- Volume table for quaking aspen and paper birch in Alaska 1/ (In board feet, Scribner)

The second secon											
D.b.h.			I	Total height, H ($\underline{\text{feet}}$) $\underline{3}$	ight,	H (feet)3/			: Basis: trees : measured $\frac{4}{4}$	es 4
D=/-	40	45	50	55	09	65	70	75	80	: aspen/bircl	ch
Inches										Number	
11	26	32	39	45	52	58	65	72	78	12 / 13	
12		43	51	58	99	74	82	83	97	13 / 3	
13			64	73	82	91	100	109	118	4 / 4	
14			77	88	98	109	119	130	140	6/3	
15			92	104	116	128	140	152	164	1 / 2	
16			108	122	135	149	162	176	190	- / 7	
17				140	156	171	186	201	217	- / 5	
18				160	177	194	211	228	245	- / 3	
19					200	219	238	257	276	- / 1	
20					224	245	266	286	307	- / -	
21					249	272	295	318	341	-/-	
22					275	300	325	351	376	- / -	

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 8.0 inches inside bark. $\frac{2}{}$ Whole-inch class (e.g., 11.0 \le 11 < 12.0) $\frac{3}{}$ Mid-point class (e.g., 57.6 \le 60 < 62.6) $\frac{4}{}$ Lines contain basic data for 36 aspen and 41 birch at least 11.0 Standard error of estimate around mean volume = 21.0 bd. ft. = 21.2%. From weighted regression: $V = -27.163 + .00995 D^2H$.

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Table 7.--Volume table for balsam poplar in Alaska 1/ (In cubic feet, by Smalian's rule)

4.5 4.5 4.5 6.3 6.8 8.3 9.0 9.6 10.3 9.0 10.1 10.1 115 120 : 9.0 20.4 21.8 23.2 24.6 26.1 2.3 23.9 25.6 27.2 28.9 30.5 32.2 33.8 35.5 37.1 5.8 17.1 18.3 19.5 20.7 21.9 9.0 20.4 21.8 23.2 24.6 26.1 2.3 23.9 25.6 27.2 28.9 30.5 32.2 33.8 35.5 37.1 5.8 27.7 29.6 31.5 33.4 35.4 37.3 39.2 41.2 43.1 9.0 20.4 21.8 23.2 24.6 26.1 2.3 23.9 25.6 27.2 28.9 30.5 32.2 33.8 35.5 37.1 5.8 27.7 29.6 31.5 33.4 35.4 37.3 39.2 41.2 43.1 9.0 20.4 21.8 23.2 24.6 26.1 2.3 23.9 25.6 27.2 28.9 30.5 32.2 33.8 35.5 37.1 2.4 27.7 29.6 31.5 33.4 35.4 37.3 39.2 41.2 43.1 9.0 20.4 21.8 23.2 24.6 26.1 9.0 20.4 21.8 23.2 24.6 26.1 9.0 20.4 21.8 23.2 24.6 26.1 9.0 30.4 31.8 34.8 40.5 42.7 44.9 47.0 49.2 9.0 40.8 43.6 46.3 49.1 51.9 54.6 57.4 60.2 63.0 2.6 45.7 48.8 51.9 55.0 58.1 61.2 64.3 67.4 70.5 73.6 2.4 55.2 84.3 57.7 61.2 64.6 68.1 71.5 74.9 78.4 81.8 2.4 56.2 60.1 63.9 67.7 71.5 75.3 91.1 91.3 91.4 119 3.4 68.0 72.5 77.1 81.7 86.3 90.9 95.5 100 105 105 9.5 3 80.7 86.2 91.6 97.0 102 108 113 119 124 130 11.7 125 133 141 149 157 165 173 180 188 11.7 125 133 141 149 157 165 173 180 219 11.7 125 133 141 149 157 165 173 180 219 11.7 125 133 141 149 157 165 173 180 219 11.7 12.7 12.8 132 19.2 19.2 212 223 247 258 11.7 12.7 18.2 19.2 19.2 212 223 247 258	ر د د									Total	height	H (+	PP+) 3	\							٠	tropa
20 1.6 1.9 2.2 2.4 2.7 8.5 8.6 9.5 100 105 110 115 120 11 120 11 120 11 120 11 120 11 120	$\frac{D}{2}$																					meas,
6.8 1.1 1.3 1.6 1.9 2.2 2.4 2.7 4 4.5 8.3 6.1 8.3 4.1 4.5 8.3 6.1 4.2 4.8 5.3 5.8 6.3 9.6 10.3 3.7 4.2 4.8 5.3 5.8 6.3 9.6 10.3 3.7 4.2 4.8 5.3 5.9 9.6 10.3 3.7 4.2 4.8 5.3 5.9 9.6 10.3 3.7 4.2 4.8 5.3 5.0 9.6 10.3 3.7 3.9 9.6 10.3 3.7 3.9 3.8 3.9 9.6 10.3 3.7 3.9 3.8 3.9 9.6 10.3 3.8 3.9 3.8 3.9 3.8 3.9 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.8 3.9 3.9 3.9 3.9 3.9 3		3						9			0						0	0			20	1 1
1.6 1.9 2.2 2.4 2.7 4.1 4.5 5.8 5.8 6.3 6.8	Inches																					Number
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3 59.2 64.2 69.2 74.2 79.2 84.2 89.2 94.2 99.2 104 109 114 119 4 75.3 80.7 86.2 91.6 97.0 102 108 113 119 124 130 5 81.6 87.5 93.4 99.3 105 111 117 123 129 135 141 7 88.2 94.6 101 107 114 120 126 133 139 146 152 141 88.2 94.6 101 107 114 120 126 133 139 146 157 164 152 88.2 94.6 101 117 124 131 139 146 154 161 168 176 95.0 102 102 117 124 131 149 157 165 173 180 188 197 206 215 10 117 125 162 170 179 188 197<	22							4	2 5	8.8	.4 6	0.	2.5	7.1	1.7	9	0	5	0	0	0	8
75.3 80.7 86.2 91.6 97.0 102 108 113 119 124 130 81.6 87.5 93.4 99.3 105 111 117 123 129 135 141 6 88.2 94.6 101 107 114 120 126 133 139 146 152 7 95.0 102 109 116 122 129 136 143 150 157 164 8 103 110 117 124 131 149 157 164 157 164 9 117 125 133 141 149 157 165 173 188 -9 1 117 125 133 141 149 157 165 173 188 -9 1 134 142 151 159 167 176 184 193 201 1 143 152 162 177 189 190 200 210 219 1 152 162 172 182 192 202 212 223 233 243 1	23								2 6	.2 6	.2 7	.2	9.2	4.2	9.2	4.	9	0	0	-		1
81.6 87.5 93.4 99.3 105 111 117 123 129 135 141 88.2 94.6 101 107 114 120 126 133 139 146 152 95.0 102 109 116 122 129 136 143 150 157 164 103 110 117 125 131 139 146 154 161 168 176 117 125 133 141 149 157 165 173 188 117 125 133 141 149 157 165 176 188 143 152 161 170 179 188 197 206 215 162 172 181 190 200 210 219 229 162 172 182 192 202 212 223 233 243 172 182 193 204 215 226 236 247 258	24									7	.3	.7	.2	1.6	^	0	0	-	-	N	3	8
88.2 94.6 101 107 114 120 126 133 139 146 152 95.0 102 109 116 122 129 136 143 150 157 164 103 110 117 125 131 139 146 154 161 168 176 117 125 133 141 149 157 165 173 180 188 176 117 125 133 141 149 157 165 173 180 188 197 201 143 152 161 170 179 188 197 206 215 152 162 171 181 190 200 210 219 229 162 172 182 193 204 215 226 236 247 258	25									8	.6	.5	4.	9	0	-	$\overline{}$	2	2	0	4	က
7 103 110 117 124 131 139 146 154 161 168 176 103 110 117 125 133 141 149 157 165 173 180 188 117 125 133 141 149 157 165 173 188 197 201 134 142 151 159 167 176 184 193 201 143 152 161 170 179 188 197 206 215 152 162 171 181 190 200 210 219 229 162 172 182 192 202 212 223 233 243 - 172 182 193 204 215 226 236 247 258 -	26									8	.2 9		0	0	$\overline{}$	2	N	3	3	4	5	2
103 110 117 124 131 139 146 154 161 168 176 179 189 150 188 190 189	27									6	0.	0	0	$\overline{}$	2	2	3	4	5	2	9	2
117 125 133 141 149 157 165 173 180 188 - 134 142 151 159 167 176 184 193 201 1 143 152 161 170 179 188 197 206 215 - 2 152 162 171 181 190 200 210 219 229 - 162 172 182 192 202 212 223 233 243 - 172 182 193 204 215 226 236 247 258 -	28										03	\vdash	-	2	3	\sim	4	5	9	9	1	2
134 142 151 159 167 176 184 193 201 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	29											\vdash	2	$_{\odot}$	4	4	5	9	1	∞	∞	1
143 152 161 170 179 188 197 206 215 - 152 162 171 181 190 200 210 219 229 - 162 172 182 192 202 212 223 233 243 - 172 182 193 204 215 226 236 247 258 -	30												3	4	5	5	9		∞	0	0	3
2 2 3 3 4 4 5 5 152 162 171 181 190 200 210 219 229 162 172 182 192 202 212 223 233 243 172 182 193 204 215 226 236 247 258	31												4	5		_	_	∞	0	0	-	1
3 162 172 182 192 202 212 223 233 243 - 172 182 193 204 215 226 236 247 258 - 172 182 193 204 215 226 236 247 258 - 172 182 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 183 204 215 226 236 247 258 - 172 182 182 182 182 182 182 182 182 182 18	32												5	9		∞	0	0	-	-	N	
172 182 193 204 215 226 236 247 258	33												9	_	∞	0	0	_	N	3	4	
	34												1	∞	0	0	-	2	3	4	5	***

Volume, inside bark, between a one-foot stump and a minimum merchantable top of 4.0 inches inside bark. Standard error of estimate around mean volume = 4.30 cu. ft. = 10.1%; $R^2 = 0.986$.

^{2/} Whole-inch class (e.g. $11.0 \le 11 < 12.0$). 3/ Mid-point class (e.g. $57.6 \le 60 < 62.6$). 4/ Lines contain basic data for 131 trees at lea

Lines contain basic data for 131 trees at least 5.0 inches d.b.h.

Table 8.--Volume table for balsam poplar in Alaska 1/

(In board feet, International 1/4-inch)

Basis: trees	Number	7	10	72	9	80	5	9	7	4	7	က	က	-	ო	ო	2	2	2	1	က	1	1-	1	1	
	120								401	451	502	558	-	1	739	805	873	944	1,018	9	1,173	5	1,338	2	,51	
	1.15			∞	216	4	0	3	382	430	480	533	588	646	902	692	835	902	973	,04	2	,20	1,280	,36	,44	
	110			/	205	3	1	N	363	409	457	508	9	616	674		0	861	2	0	,07	, 14	$^{\circ}$,30	,38	
	105			161	193	227	9	0	4	∞	3	∞	3	∞	4	669	5	2	∞	5	2	6	9	4	,3	
	100			151	∞	$\overline{}$	4	∞	2	9	411	5	0	5	0	663	2	_	4	0	696	,03	1,107	,17		
	9.2		113	4	170	0	3	1	0	4		3	1		575	2	∞	737	6	5	\vdash	∞	4	, 11	∞	
feet) ³ /	06		105		5	∞	\neg	5	∞	2		0	4	0	542	0		969	5	0	9	2	991	,05	2	
l height, H (<u>feet</u>)3	85	74	96	121	147	174	204	236	269	305	342	381	422	465	209	556	604	654	902	760	816	1	933	0	2	24:
Total he	80	67	88	111	135	9	189	219	251	284	319	2	394	3	1	520	9	613	9	-	9	2	876	3	993	0.0
	75	09	79	0	123	4	_	0	3	9	0	3	9	0	4	∞	N	/	$\overline{}$	9						0
	70		71			135	9	∞	-	4	7	0	3	7	$\overline{}$	449	∞	3	7							
	65		62			122	4	9	0	2	250	∞	-	4												:
	09		54		89	109	130	152	176	201	227	255	283	313												
	55	31			78		-	3	2																	
	20	23			29		00	ω																		
	45	16			55																					
	40	6	19	31																						t
D.b2h.,	Inches		12													25										1

 $1/\sqrt{1}$ From weighted regression: V = -49.1199 + 0.010,941,441 D²H.

Standard error of estimate around mean volume = 47.7 bd. ft. = 15.2%; $R^2 = 0.954$.

Lines contain basic data for 89 trees at least 11.0 inches d.b.h.

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 8.0 inches inside bark. 2/ Whole-inch class (e.g., 11.0 \le 11 < 12.0).
3/ Mid-point class (e.g. 57.6 \le 60 < 62.6).
4/ Lines contain basic data for 89 trees at least

Table 9. -- Volume table for balsam poplar in Alaska 1/

(In board feet, Scribner)

: Basis: : trees	: ured 4/ Number	7	10	5	9	8	ις	9	7	4	7	က	က	1	8	က	S	2	2	1 1	က	1 1	1 1	1	1 1	
	120								4	0	435	∞	3	∞	642		759	2	885	5	1,020	60'	1,165	,24	,31	
	115				184		5	0		/	415	9		9	613	9	725	785		-	/	1,044		1,187	9	
	110			145		506	4	1	\neg	5	395	3	486	3	584	3	0	4	0	9	3	266	9	3	, 20	
	105			136	164	194	2	9	0	3	/		9	0	556	0	5	\vdash	9	2	∞	4	\vdash	∞	,14	
	100			128	2	183	$\overline{}$	4	∞	\vdash	2	0	3	ω.	2	1	2	1	3	∞	843	902	963	2	0	
al height, H ($\overline{ ext{feet}})^{rac{3}{2}}$	95		9 2			172	0	$^{\circ}$	9	6	3	/	\vdash	454	498	544	0	4	0	4	0	854	$\overline{}$	/	1,034	
ght, F	9.0		88		3	160	∞	$\overline{}$	4	∞	\vdash	5	∞	2	470	7	5	0	2	0	5	807	9	-	1	
al hei	82		80		2	148	/	0	3	9	0	2	9	0	4	∞	2	9	\vdash	9	709	9	812	9	2	
Tot	80	54			114		9	∞	$\overline{}$	4	/	0	4	/	-	5	0	3	1	\vdash	9	-	9	\vdash	9	
	75		65	84		126	4	1	0	2	5	∞	-	4	∞	2	5	0	3	7						
	70	42	58	75	94	114	3	5	∞	0	3	9	0	2	355	∞	2	5	0							
	65		50				2	4	9	0	214	4	9	0												
	5 60	3 29	5 43	2	4 74		10	12	15	17	194	-	4	7												
	2	6 2	8	0 4	4 6	8	3	0 11	133	5																
	5 50	0			4 5			10																		
	40 4	4	် ၂		4	5	7																			
D.b.h.	Inches				14																					

^{1/} From weighted regression: $V=-46.7415+0.00956~\mathrm{D}^2\mathrm{H}$

U. S. Forest Service, Research Note NOR-5

Volume, in 16-foot logs, between a one-foot stump and a merchantable top equal to 40% of d.b.h. but not less than 8.0 inches inside bark. Standard error of estimate around mean volume = 40.1 bd. ft. = 14.6%

Whole-inch class (e.g. 11.0 \le 11 <12.0) 3/ Mid-point class (e.g. 57.6 \le 60 <62.6) 4/ Lines contain basic data for 89 trees at least 11.0 inches d.b.h.

